AUSTRALIAN MYCETOPHILIDAE.

Synopsis of the Genera.

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(Plates xxii-xxiii, and seven Text-figures.)

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Before Skuse started to publish the results of his study of the Australian Mycetophilidae in 1888, very little was known about them. Four species only had been made known by Walker, one, *Platyura magna*, from the mainland (*List Dipt. Brit. Mus.*, 1848) and three others from Tasmania, *Sciophila par*, *Leia fulva* and *Mycetophila aequalis* (*Insecta Saund.*, 1856). On account of Walker's indifferent descriptions, none of these species seems to have been recognized subsequently by Skuse or others.

Skuse's work on the family (including the Sciarinae which he considered as a separate family) was embodied in four papers [These Proceedings, Vol. 3, 1888, 657-726 (Sciarinae), and 1123-1222 (rest of the subfamilies); and Vol. 5, 1890, 373-412 (Sciarinae, 390-412) and 595-640 (remaining subfamilies)].

The first paper (referred to in the following text as Skuse, 1888*a*) was accompanied by Plate xi, the second (referred to as Skuse, 1888*b*) by Plates xxxi and xxxii, and the fourth (referred to as Skuse, 1890*b*) by Plate xix.

Skuse's study embraced twenty-six genera of the Mycetophilidae, including 113 new species, half of which, however, belong to the genus *Sciara*. Among these twenty-six genera, fifteen were described as new and as being peculiar to Australia. However, since then, several of these genera have been recognized in other parts of the world and two of them fall in synonymy with well-known cosmopolitan genera. The types of the species described in the first paper by Skuse are in the Macleay Museum, Sydney, and those described in the supplements are in the Australian Museum, Sydney, both series being in excellent condition.

Since Skuse's time, very few workers have paid any attention to the Australian Mycetophilidae. F. W. Edwards, in a study of the subfamily Ditomyiinae, described two species of *Centrocnemis* (*Ann. Mag. Nat. Hist.*, (9), 7, 1921, 434-435) from Tasmania; in 1924, a wingless Sciarid inquiline in termites' nest, *Austrosciara termitophila*, has been made known by Schmitz and Mjöberg (*Ark. f. Zool.*, 16, No. 16, 1-3); and in 1925, Dr. E. W. Ferguson published (Proc. Linn. Soc. N.S.W., 1, 487) the description of a Tasmanian species of *Arachnocampa*, a genus known till then only from New Zealand.

In these Proceedings (liii, 1928, 599) J. R. Malloch published a table to the genera of the subfamily Ceroplatinae in which the Australian genera were specially considered; however, as this work had been done without knowledge of what had been published by Edwards and myself, Malloch later gave corrections

to this key (*l.c.*, liv, 1929, 107). Edwards took up again quite recently (*l.c.*, liv, 1929, 162-175) the study of this subfamily, his main object being the splitting of the genus *Platyura* in nineteen subgenera, describing at the same time four new Australian species of this genus.

In the course of a collecting trip to Tasmania in 1921-22, I had the opportunity of collecting a large number of Mycetophilidae, the nature of the country and its relatively moist climate being much more favourable to the development of an abundant Mycetophilid fauna than the Australian mainland.

In attempting to classify this material, it was soon apparent that many more genera were represented in it than Skuse had recognized in his own collection. As I had no access to Skuse's types, I proposed to the late Dr. Ferguson to work out the Australian Fungus Gnats in collaboration with him, he being entrusted with the revision of the types, and I mostly with the generic part of the work. Unfortunately, his untimely death cut this project short. Until further opportunity occurs of studying Skuse's types, I am presenting now only a synopsis of the genera of the Australian Mycetophilidae as an introduction to the revision of the family, and also because Skuse's papers did not contain any key to the genera. I hope that the key I give here will be helpful to the Australian students; it is mostly based on that published in 1925 by F. W. Edwards (*Trans. Ent. Soc. Lond.*) and on that which Edwards and I built up for the New Zealand Fungus Gnats (*Trans. N.Z. Inst.*, 56, 1926). To make the work as complete as possible this key not only contains the genera recognized from Australia, but also those from the rest of the world, as some of these are likely to be found in this country sooner or later.

To establish the validity of the new genera proposed in the course of this study, I have had to describe a genotype for each, but otherwise I have refrained from describing new species until Skuse's types could be examined.

The structure of the hypopygium of only the little characteristic species is here given.

I am very much indebted to Dr. A. J. Nicholson for the loan of a good series of Skuse's paratypes from the Macleay Museum. These have been most helpful in settling many points of generic importance, but I do not think that in all cases one could rely on them to get a definite idea of Skuse's species, as in many more or less obscure forms a confusion of species is certain to have occurred, the more so because Skuse did not make any detailed study of the genitalia. I am further greatly indebted to Dr. A. J. Nicholson and Dr. I. M. Mackerras for submitting a small but interesting collection of Fungus Gnats from New South Wales, which contained some new generic forms, and amongst others a most remarkable one mimicking a wasp.

The number of Australian genera recognized here amounts to forty-seven. They can be listed as below. The number of species described, or else undescribed but known in collections, is given for each genus and the genera which have not been recorded from Australia before are preceded by an asterisk.

Ditomyiinae: *Centrocnemis* Phil. (8 species).

Diadocidiinae: **Diadocidia* Ruthe (1).

Macrocerinae: *Macrocera* Mg. (3).

Ceroplatinae: *Arachnocampa* Edw. (1); *Antriadophila* Skuse (4); *Pseudoplatyura* Skuse (1); **Neoantlemon*, nov. (1); **Nicholsonomyia*, nov. (1); *Ceroplatus* Bosc. (4); *Platyura* Mg. (15).

Lygistorrhininae: *Lygistorrhina* Skuse (1).

Sciarinae: *Sciara* Mg. (63); *Zygoneura* Mg. (1); *Trichosia* Winn. (1); *Austrosciara* Sch. and Mjb. (1).

Sciophilinae.

Mycomyiini: *Mycomyia* Rd. (*Sciophila* Sk. *nec* Winn.) (18); *Neompheria* O.-S. (1).

Sciophilini: **Pareudicrana*, nov. (2); **Allocotocera* Mik. (2); **Neoallocotocera*, nov. (1); **Tasmanina*, nov. (2); **Aneura* Marsh. (1); **Phthinia* Winn. (1); *Stenophragma* Skuse (3); **Sciophila* Winn., Subgen. *Austrosciophila*, nov. (1); *Trizygia* Skuse (3); **Paratrizygia*, nov. (1); *Aphelomera* Skuse (3); **Paramorganiella*, nov. (1).

Gnoristini: **Synapha* Mg. (1); **Austrosynapha*, nov. (1); **Pseudalysiinia*, nov. (1).

Leiini: *Clastobasis* Skuse (1); *Ateleia* Skuse (1); *Leia* Mg. (1); *Acrodicrania* Skuse (Incl. *Anomalomyia* Hutt.) (10); **Paraleia*, nov. (1); **Tetragoneura* Winn. (3).

Mycetophilinae: *Exechia* Winn. (*Brachydicrania* Sk.) (4); **Rhymosia* Winn. (*Synplasta* Sk.) (2); **Allodia* Winn. (1); *Dynatosoma* Winn. (1); *Trichonta* Winn. (2); *Mycetophila* Mg. (15); *Delopsis* Skuse (1); **Zygomyia* Winn. (1); *Sceptonia* Winn. (1).

A perusal of this list of genera will show that all subfamilies of the Mycetophilinae are represented in Australia, with the exception of the Boletophilinae and Manotinae; the latter may sooner or later be found here, as the genus *Manota* is known from New Zealand.

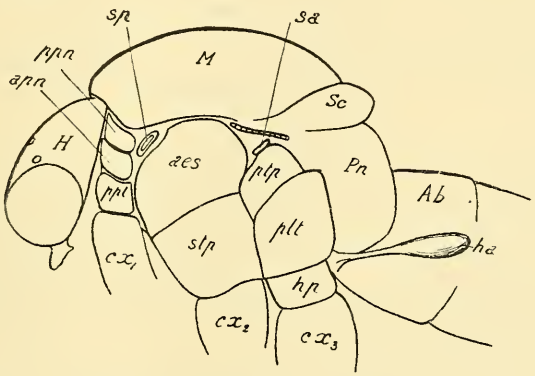
What is rather striking in this ensemble is the mediocre development of the most primitive groups like Ditomyiinae with only eight species as compared with twenty-six from New Zealand, and the Macrocerinae with three species, whereas eighteen, distributed in two genera, are known in New Zealand, and that *Macrocera* is abundantly represented in nearly all parts of the world. Other features of this fauna are the large development of the Sciarinae and the comparatively large number of genera in the Sciophilinae which are mostly monotypic. This last feature is also noticeable to a marked degree in the New Zealand fauna and may be, of course, due to the fact that we assign much too narrow limits to the generic concepts in this group, the distinction between genera being often based on a single venational character like the distal or proximal position of a fork. A number of the original generic divisions have been established by the old authors who had before them an incomplete fauna of one part of the world only, but as our knowledge extends to that of other regions, intermediate forms are found which do not enter within the known generic concepts. Unfortunately, in order to receive these forms, the trend has been in Mycetophilid studies to multiply the genera rather than to lump them, and now there is nothing left but to continue this method until our knowledge of the whole world fauna will allow lumping, based on a better understanding of the main taxonomic characters. I think that a closer study of the morphology of the head and its appendages could, to a certain extent, give a better base of classification than the wing venation in certain groups. Unfortunately, the morphology of the head has been often ignored in many of the genera established in the past.

The Australian Sciophilinae exhibit more marked affinities with those of New Zealand than I thought when studying the New Zealand Fungus Gnats (*Trans. N.Z. Inst.*, 56, 1926, 753), because at the time the Australian forms were not

as well known to me. The genera *Aneura*, *Phthinia*, *Aphelomera*, *Acrodicrania* and *Tetragoneura* are common to both countries. The subfamily Mycetophilinae is represented by a comparatively small number of species; *Mycetophila*, which is everywhere so abundant, and especially so in New Zealand, contains only about fifteen species and *Zygomyia* only one; on the other hand, the number of genera in that subfamily is noticeably greater in Australia than in New Zealand.

In order to allow non-specialists in the group to classify their material from the key here given, a few words on the nomenclature used may be necessary, inasmuch as I adopt here for the first time the wing venation nomenclature amended by R. J. Tillyard as far as the limit of M and Cu is concerned.

The costa either stops at the tip of R_5 or is produced beyond it, but never reaches the tip of M_1. Sc is more or less elongated, but often very short, and then it is interrupted; when it is complete it mostly joins the costa, but sometimes it ends in R_1; Sc_2 can be placed anywhere from near the base of Sc_1 to near its tip; it is often absent.



Text-fig. 1.—Thorax of a Mycetophilid seen from the side. *apn* and *ppn*, anterior and posterior divisions of the pronotum which are often fused together; *ppl*, propleura; *stp*, sternopleurite; *aes*, anepisternite; *ptp*, pteropleurite; *plt*, pleurotergite; *hp*, hypopleurite; *Pn*, postnotum; *Sc*, scutellum; *M*, mesonotum; *H*, head; *Ab*, abdomen; *ha*, halteres; *cx*, coxae; *sa*, subalar knob; *sp*, spiracle.

In most cases Rs is simple, but, when it is branched, Edwards has shown that the upper branch is in reality R_4 and not R_{2+3}; this branch, R_4, may take a vertical or transverse course and end in the costa or in R_1; in the latter case it forms a small submarginal cell which is a characteristic of the Sciophilinae, but its presence is sometimes inconstant even in a given species. The two forks which come after the radial sector will be referred to in my key and descriptions, for the sake of simplicity, as the *median fork* and the *posterior fork*. The former is formed by M_1 and M_2, whereas there has been some uncertainty as to the composition of the latter. Comstock and Needham and most authors consider it as formed by Cu_1 and Cu_2, but Tillyard has shown (Panorpoid Complex, Part 3, These Proc., 1919, 533) that the concave vein which runs below and right against the stem of this fork, and which is often interrupted, is in reality Cu_2, so that the posterior fork could be considered at most as a branched Cu_1, a state of affairs unknown in Diptera and even in the Mecoptera.

If the venation of the primitive genera like *Ditomyia* or *Bolitophila*, or even the less primitive *Nicholsonomyia*, in which the base of M is still present, be examined, it will be seen that the vein between M_2 and Cu_1 is actually M_{3+4}, and that the vein which unites it to Cu_1 is m-cu and not the base of Cu_1. In more specialized forms, where m-cu has disappeared, the posterior fork may seem to be a branched cubitus, but it is none the less formed by the switching over of M_3 on to Cu_1.

Cu_2 has even been taken by authors as one of the anal veins, but the true first anal vein is a convex one and cannot be confused with Cu_2 for this reason. It is often interrupted, weak, or even absent; in a few cases a trace of a second anal vein may be distinguished.

The wing membrane of the Mycetophilidae carries microscopic setae, known as microtrichia, which can be arranged in definite rows, but in many cases large hairs, the macrotrichia, are also present; they can easily be distinguished under low magnification with a pocket lens. These macrotrichia may completely take the place of the microtrichia, in which case they will be recognized not only by their size, but also by their more or less pronounced curvature.

Characters given by the presence or absence of bristles or hairs on some of the parts of the thorax are of great help in the classification of the family. Text-figure 1 explains the nomenclature of the different parts of the thorax.

Key to Subfamilies.

1. Medio-cubital cross-vein present (Plate xxii, figs. 1-5) 2
   Media and cubitus not connected by cross-vein, M_3 being in contact with Cu_1 and forming a fork with it (Pl. xxii, figs. 6-12; Pl. xxiii, figs. 13-22) 6
2. R_4 present and rather long, generally half or more than half as long as R_5; Sc short and ending free (Pl. xxii, fig. 1); posterior divisions of pronotum with one or more longish bristles ..... Ditomyiinae
   R_4 less than half as long as R_5, sometimes weak or absent; Sc almost always long and ending distinctly in the costa (Pl. xxii, figs. 4, 5); posterior divisions of pronotum without long bristles 3
3. Media and radius fused for a short distance (Pl. xxii, figs. 4, 5) 4
   These two veins not fused, a distinct r-m cross-vein being present (Pl. xxii, fig. 2) 5
4. M_3 and Cu_1 at first convergent, then divergent (Skuse, 1888*b*, Pl. xxxi, figs. 1-2), if not so the wing membrane carries macrotrichia or else the head has two longitudinal furrows; tibial bristles absent ..... Macrocerinae
   M_3 and Cu_1 divergent from the start (Skuse, 1888*b*, Pl. xxxi, fig. 3); macrotrichia always absent from the wing membrane; tibial bristles present even if small ..... Ceroplatinae
5. Media with distinct basal section (Pl. xxii, fig. 2) ..... Bolitophilinae
   Basal section of media absent 6
6. R_1 and Rs running separately to the base of the wing; traces of the base of R_{2+3} present (Skuse, 1890*b*, Pl. xix, fig. 1) ..... Lygistorrhininae
   R_5 rising from R well beyond the base of wing, or base of Rs wanting; no trace of R_{2+3} 7
7. Eyes nearly or quite connected above antennae by a dorsal bridge; if eyes rounded, then the male wingless or both sexes wingless; base of Rs short and transverse; r-m long and in a line with Rs ..... Sciarinae
   Eyes rounded without dorsal bridge; base of Rs and r-m usually more or less oblique except in many Sciophilinae 8
8. Prothorax without strong bristles but some bristles or hairs present on other parts of the thorax; head flat or slightly concave behind with a row of projecting orbital bristles which are more or less curved backwards; antennae inserted above the middle of the head (only one genus, *Manota*) ..... Manotinae
   Prothorax with distinct long bristles or no bristles at all on the thorax; head convex behind; orbital bristles not forming a conspicuous row; antennae inserted about the middle of the head 9

9. Microtrichia of wings irregularly arranged; Sc usually long; lateral ocelli usually far from the margins ..... Sciophilinae
Microtrichia of wings in more or less distinct lines; Sc short; lateral ocelli always touching the eye margins ..... Mycetophilinae

Key to the Genera.[1]

Subfamily Ditomyiinae.

1. Cross-vein r-m present; antennae flattened; several bristles on posterior division of pronotum 2
Cross-vein obliterated by fusion; antennae cylindrical; one strong bristle on posterior divisions of pronotum; eyes deeply emarginate above antennae with narrow *Sciara*-like dorsal bridge ..... (*Nervijuncta* Marshall)
2. Basal section of Rs, r-m and basal section of M_3 all in a nearly vertical line so that the distal end of the basal cell is truncated (Pl. xxii, fig. 1) .. *Centrocnemis* Phil.
Basal cell pointed at its distal end, the basal section of Rs and M_1 being oblique in opposite directions 3
3. Eyes reniform; R_1 hardly longer than the second portion of Rs; anepisternites and postnotum bristly ..... (*Symmerus* Walker)
Eyes rounded; R_1 much longer than the second portion of Rs; anepisternites and postnotum bare ..... (*Ditomyia* Winn.)

Subfamily Bolitophilinae.[2]

Only one genus ..... (*Bolitophila* Meig.)

Subfamily Diadocidiinae.

Sc ending in costa; An reaching the wing margin; r-m and first section of M_2 in one transverse line (Pl. xxii, fig. 3) ..... *Diadocidia* Ruthe.
Sc ending free; An evanescent; r-m uniting Rs and M_1 not in contact with M_3 .....
..... (*Heterotricha* Lw.)

Subfamily Macrocerinae.

Head with longitudinal furrows; antennae about as long as the body, sometimes longer
..... *Macrocera* Mg.
Head without longitudinal furrows; antennae about as long as the thorax; their segments fusiform ..... (*Paramacrocera* Edw.)

Subfamily Ceroplatinae.

1. Antennae with 12 to 15 segments 2
Antennae with 16 segments 4
2. Antennae strongly pectinate, pleurotergites hairy ..... (*Plateroptylon* West.)
Antennae simple 3
3. Antennae with 14 segments ..... *Antriadophila* Sk.
Antennae with 15 segments ..... *Pseudoplatyura* Sk.
4. Prothorax large, not divided in the middle; hind tibiae with only one irregular apical comb; labella greatly elongate, slender and rigid; palpi reduced; R_1 ending in R_1 ..... (*Rhynchoplatyura* de Meij.)
Prothorax small, usually divided in the middle or with only a narrow bridge uniting the two lateral parts of the pronotum; hind tibiae with both inner and outer comb 5
5. Mouth parts elongate, at least as long as the head; postnotum and pleurotergites bare; R_1 ending in the costa 6
Mouth parts not elongate 8
6. Labella greatly elongate and fleshy ..... (*Asyndulum* Latr.)
Labella small, but mouth parts produced either by elongation of the clypeus or of the labium 7

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[1] The genera placed in parentheses have not been recorded from Australia yet.

[2] *Arachnocampa* which was previously included among the Bolitophilinae, but whose connection with that subfamily was rather dubious, mostly on account of the larval morphology, has been recently removed by Edwards to the Ceroplatinae.

7. Sc_2 incomplete; labium elongate; palpi reduced and placed at the base of the proboscis ..... (*Antlemon* Hal.)
   Sc_2 complete, ending in costa; clypeus elongate; the palpi 4-segmented and inserted towards the middle of the proboscis ..... *Neoantlemon*, nov.
8. Palpi reduced with one swollen terminal segment and sometimes a small indistinct one; antennae usually stout and strongly compressed ..... *Ceroplatus*[1] Bosc.
   Palpi normal, with 3 or 4 distinct segments 9
9. Base of media quite distinct or indicated by a fold-like basal extension 10
   Base of media quite indistinguishable ..... *Platyura*[2] Meig.
10. Base of media distinct, no fusion between Rs and M ..... *Arachnocampa* Edw.
    Base of media fold-like (Pl. xxii, fig. 5), Rs and M partly fused 11
11. R_4 ending in R_1; 3 ocelli; pleurotergites and prosternum bare .... (*Apemon* Joh.)
    R_4 ending in costa 12
12. No ocelli ..... (*Hesperodes* Coq.)
    Three ocelli 13
13. r-m present ..... (*Paleoplatyura* Meun.)
    r-m absent, wasp-like fly (Text-fig. 2) ..... *Nicholsonomyia*, nov.

Subfamily Sciarinae.

(Key to Australian and New Zealand genera only.)

1. Palpi well developed; both sexes winged 2
   Palpi reduced with one or two small segments; female or both sexes sometimes wingless 5
2. Branches of media wide apart at the base beyond the middle; segments of male flagellum with long pubescence and long necks ..... *Zygoneura* Mg.
   Branches of median fork normal, parallel or widely divergent 3
3. The whole wing membrane rather densely covered with macrotrichia as well as all the veins ..... *Trichosia* Winn.
   Macrotrichia absent from the wing membrane 4
4. Costa produced over the tip of Rs ..... *Sciara* Mg.
   Costa not produced ..... (*Ohahunea* Edw.)
5. Both sexes winged, posterior fork past the proximal end of r-m ..... (*Scythroprochroa* End.)
   Female wingless or practically so, and sometimes halterless 6
6. Female antennal segments longer than broad and with necks; tergal and sternal plates of abdomen distinct; male winged ..... (*Phnyxia* Joh.)
   Female antennal segments not longer than broad 7
7. Female with very tiny rudiments of wings and with distinct halteres; mesonotum, scutellum and postnotum all well distinct from each other ..... *Austrosciara* Schmitz and Mjöberg
   Female without traces of wing or halteres; all the thoracic sclerites, except the pronotal side lobes, fused into one segment ..... (*Neophnyxia* Tonn.)

Subfamily Sciophilinae.

1. Two ocelli placed together; hind tibial microscopic setae arranged in regular longitudinal rows; wings without macrotrichia on the membrane ..... (Tribe Mycomyiini) 2
   Three ocelli or, when only two present, the hind tibial setae are irregularly arranged 3
2. Costa ending rather abruptly at the tip of R_5, which usually reaches the extreme tip of the wing; wings without conspicuous markings; no fold between R_5 and M_{1+2} (Skuse, 1890*b*. Pl. xix, fig. 3); eyes slightly emarginate above antennae ..... *Mycomyia* Rond.
   Costa usually continued at least a short distance beyond the tip of R_5, which does not quite reach the wing-tip; wings usually with conspicuous markings; usually a more or less distinct, often vein-like fold between R_5 and M_{1+2}; eyes not or scarcely emarginate ..... *Neoempheria* O.-S.

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[1] For key to subgenera of *Ceroplatus*, including *Hetcropternus*, see Edwards, These Proceedings, 1929, 173.

[2] For key to subgenera of *Platyura*, see These Proceedings, 1929, 163.

3. Wing with macrotrichia on the membrane; the macrotrichia sometimes absent; postnotum usually with hairs or bristles; Sc nearly always long; last section of R_1 several times as long as r-m which is usually oblique; 7th abdominal segment usually large and visible ..... (Tribe Sciophilini) 5
Wings without macrotrichia on the membrane; 7th abdominal segment usually small and retracted 4

4. Sc always long; last section of R_1 several times as long as r-m which is more or less oblique or transverse; median fork always much longer than its stem ..... (Tribe Gnoristini) 32
Sc long or short; last section and R_1 usually little if not longer than r-m which is long and nearly longitudinal (Pl. xxiii, fig. 19) ..... (Tribe Leiini) 42

5. Lateral ocelli contiguous with the eye margins 6
Lateral ocelli remote from the eye margins 7

6. Abdomen normal, as in *Platyura* ..... (*Eudicrana* Lw.)
Abdomen cylindrical, elongate, about three times as long as the thorax (Pl. xxii, fig. 6) ..... *Pareudicrana*, nov.

7. Base of the posterior fork distinctly proximal to that of the media; hind tibiae without distinct apical comb 8
Base of posterior fork distinctly distal, or nearly under that of the media, or else either that fork or that of the media absent; hind tibiae generally with a distinct apical comb; pronotum hairy 17

8. Postnotum hairy or bristly, at least towards its side; pleurotergites hairy 9
Postnotum quite bare 15

9. M_1 complete or almost so 10
M_1 faint or obviously defective at base; R_3 rather wavy; Sc_2 before the middle of Sc, sometimes faint or absent; wings unmarked 14

10. Sc_1 interrupted, ending free ..... (*Taxicnemis* Edw.)
Sc_1 complete 11

11. Sc_2 well beyond the middle of Sc_1 13
Sc_2 before the middle of Sc_1 or else absent 12

12. Micro- and macrotrichia both present on the wing membrane; Sc_2 absent (Pl. xxii, fig. 8) ..... *Neoallocotocera*, nov.
Only the macrotrichia present on wing membrane; Sc_2 present (Pl. xxii, fig. 7) ..... *Allocotocera* Mik.

13. R_5 straight; costa not produced beyond tip of R_5; wings with dark markings .... (*Leptomorphus* Curt.)
R_5 wavy; costa distinctly produced; wings unmarked ..... (*Polylepta* Winn.)

14. Costa produced but slightly over R_5 ..... (*Neuraltelia* Rond.)
Costa produced much beyond the tip of R_5; base of M_1 traceable, but faint, and placed only slightly beyond the posterior fork ..... (*Paraneuroltelia* Landr.)

15. Pleurosternites hairy; Sc ending in R_1; body stout ..... (*Syntemna* Winn.)
Pleurosternites bare; Sc ending in the costa; body usually long and slender 16

16. Macrotrichia present at tip of wing only; Sc_2 in the middle of Sc_1 .... (*Paratinia* Mik.)
Macrotrichia present over the whole wing; Sc_2 well before the middle of Sc_1 (Pl. xxii, fig. 10) ..... *Aneura* Marsh.

17. Posterior fork under or just a little before the median fork (Pl. xxii, fig. 9) .... *Tasmanina*, nov.
Posterior fork, when present, well after the median one 18

18. Legs extremely long and slender; the first segment of front tarsi twice as long as the tibia; median fork broad, the branches curving widely apart at the base; Cu wavy at the end (Pl. xxii, fig. 11) ..... *Phthinia* Winn.
Legs normal; median fork pointed at base or absent 19

19. M_2 complete 20
M_2 detached, present only as a short, free vein on the wing margin; M_3 also faint or detached at the base 28

20. Stem of median fork more than twice as long as r-m; anepisternites and subalar knob hairy; no posterior fork ..... (*Parvicellula* Marsh.)
Stem of median fork very short, at most twice as long as r-m 21

21. The posterior fork present although sometimes incomplete 22
No posterior fork 27
22. Posterior fork incomplete; the base of M_3 obsolete ..... (*Morganiella* Tonn.)
Posterior fork complete 23
23. Sc_2 beyond base of Rs 24
Sc_2 before or over the base of Rs 25
24. Mouth parts elongate (at least in the male) (Text-fig. 5); macrotrichia recumbent, pointing towards the tip of wing (Pl. xxiii, fig. 15) .... *Paramorganiella*, nov.
Mouth parts normal; macrotrichia erect or pointing slightly towards base of wing ..... (*Megalopelma* End.)
25. Sc_2 ending just a little over the base of Rs; posterior fork very short; last section of Cu_1 bent so as to end perpendicularly to the wing margin (Skuse, 1890*b*, Pl. xix, fig. 5) ..... *Stenophragma* Skuse.
Sc_2 ending well after the base of Rs; posterior fork usually long, its branches normal 26
26. Anepisternites hairy ..... (*Sciophila* Mg.)
Anepisternites bare ..... Subgen. *Austrosciophila*, nov.
27. Macrotrichia recumbent as in *Sciophila* ..... *Acnemia* Winn.
Macrotrichia reflexed as in *Megalopelma* ..... (*Monoclona* Mik.)
28. Sc short, not reaching the costa or R_1, ending free ..... (*Azana* Walk.)
Sc reaching the costa 29
29. Anepisternites and subalar knob hairy 30
Anepisternites and subalar knob bare 31
30. Sc ending in costa; r-m oblique and short (Skuse, 1888*b*, Pl. xxxii, fig. 12) ..... *Trizygia* Skuse.
Sc ending in R_1; r-m longitudinal and elongate ..... (*Neotrizygia* Tonn.)
31. M_1 complete (Pl. xxiii, fig. 14) ..... *Paratrizygia*, nov.
M_1 incomplete; fork highly arched; slender insect (Skuse, 1888*b*, Pl. xxxii, fig. 13) ..... *Aphlelomera* Skuse.
32. Seventh abdominal segment quite large in both sexes and even the eighth visible externally; very slender insect ..... (*Spioletta* Edw.)
Seventh abdominal segment usually retracted, but when visible then noticeably smaller than the preceding one, the eighth not visible 33
33. Thorax completely devoid of hairs or bristles; only one tibial spur present (Pl. xxiii, fig. 18) ..... *Pseudalysiinia*, nov.
Thorax with some hairs or bristles 34
34. Base of posterior fork well beyond that of the media ..... (*Coelosia* Winn.)
Base of cubital fork before, below or scarcely beyond that of the media 35
35. Sc ending free (Pl. xxiii, fig. 17) ..... *Austrosynapha*, nov.
Sc ending in costa or in R_1 36
36. Sc ending in R_1 37
Sc ending in the costa 38
37. Proboscis slightly produced, about as long as the head ..... (*Hadroneura* Lund.)
Proboscis not at all produced ..... (*Dziedzickia* Joh.)
38. Proboscis very elongate ..... (*Gnoriste* Mg.)
Proboscis shorter than the head 39
39. Sc_2 present and placed well beyond middle of Sc_1 40
Sc_2 near middle of Sc_1 or absent 41
40. Base of posterior fork beyond base of stem of median fork (Pl. xxiii, fig. 16) .... *Synapha* Mg.
Base of posterior fork below or before base or stem of median fork ..... (*Palaeoempalia* Meun.)
41. R_4 present; Sc_2 absent ..... (*Apolephthisa* Grzeg.)
R_4 absent; Sc_2 usually present ..... (*Boletina* Staeg.)
42. Sc distinctly ending in the costa (faint apically in some species of *Leia*); tibial bristles long and strong 43
Sc usually short, ending free or in R_1 50
43. R_1 twice as long as r-m which is rather oblique; M_1 often detached at base; Sc_2 absent ..... (*Rondaniella* Joh.)
R_1 at most twice as long as r-m, often shorter; r-m usually longitudinal 44

44. Lateral ocelli far removed from eye margins 45
Lateral ocelli touching the eye margins, or else less distant from them than their own diameter 47
45. M_3 and M_1 both distinct at base ..... (*Grcenomyia* Brunn.)
M_3 detached at base 46
46. M_1 detached at base (Skuse, 1888*b*. Pl. xxxii, fig. 11) ..... *Atelia* Skuse.
M_1 not detached at base ..... (*Cawthronia* Tonn.)
47. Base of Rs wanting; M_1 and M_3 detached at base ..... (*Leiella* End.)
Base of Rs present; M_1 not detached at base 48
48. Pleurotergites not bulging and devoid of hairs ..... *Paraleia*. nov.
Pleurotergites bulging and hairy 49
49. Costa ending at tip of R_5 and M_3 complete at base ..... *Leia* Mg.
Costa produced over the tip of R_5, if not so, then M_3 is incomplete at base; Sc_2 present or absent; anal vein strong or faint (Skuse, 1888*b*, Pl. xxxii, fig. 10) ..... *Acrodicrania* Skuse
50. M_3 detached at base 51
M_3 not detached at base 54
51. M_{1+2} simple; ocelli touching the eye margins 52
M_{1+2} forked; ocelli remote from the eye margins 53
52. Cu_1 sinuous; An. ending in its elbow or else ending free at some distance before this elbow; the little cell not being thus completely closed ..... (*Cycloneura* Marsh.)
Cu_1 nearly straight, not forming a small cell with An. .... (*Paracycloneura* Tonn.)
53. Costa not produced over the tip of R_5 (Skuse, 1890*b*. Pl. xix, fig. 6) ..... *Clastobasis* Skuse.
Costa produced over the tip of R_5 ..... (*Paradoxa* Marsh.)
54. Ocelli wanting; a chitinized fold between R_5 and M_1 ..... (*Syndocosia* Speiser.)
Ocelli present, no fold between R_5 and M_1 55
55. R_1 very short; r-m several times longer than R_1; lateral ocelli not very far distant from the eye margins ..... (*Novakia* Strobl.)
R_1 not shorter than r-m, sometimes 2, 3 or more times longer 56
56. Lateral ocelli touching the eye margins ..... (*Docosia* Winn.)
Lateral ocelli remote from the eye margins 57
57. Sc ending in R_1; posterior fork near the base of wing .... (*Ectrepesthoneura* End.)
Sc short and ending free; posterior fork more distal 58
58. Cu_1 sinuous; An. ending in one of its elbows; M_1 sinuous ..... (*Sigmolea* Edw.)
Cu_1 straight; An. not fusing with it 59
59. Hind tibial comb present ..... (*Megophthalmidia* Dz.)
Hind tibial comb absent 60
60. Pleurotergites hairy ..... (*Trichoterya* Tonn.)
Pleurotergites bare (Pl. xxiii, fig. 13) ..... *Tetragoneura* Winn.

Subfamily MYCETOPHILINAE.

1. Anepisternal and pteropleural bristles absent; hind coxa with a fairly strong bristle at base; empodia absent or rudimentary; hind tibial comb usually indefinite or absent; tibial bristles short ..... (Tribe *Exechini*) 2
Anepisternal bristles present; hind coxa usually without basal bristle; empodia and hind tibial comb nearly always distinct ..... (Tribe *Mycetophilini*) 6
2. Costa produced well beyond tip of R_5 ..... (*Anatelia* Winn.)
Costa ending at R_5 3
3. Base of posterior fork beyond that of the media (Skuse, 1890*b*, Pl. xix, fig. 9) .... *Exechia* Winn.
Base of posterior fork below or before that of the media 4
4. An. strong and distinct (Pl. xxiii, fig. 20) ..... *Rhymosia* Winn.
An. short and weak or absent 5
5. Cu_2 very long and distinct, reaching nearly to the middle of the posterior fork .... (*Brachypeza* Winn.)
This vein shorter and less distinct (Pl. xxiii, fig. 21) ..... *Allodia* Winn.
6. Pteropleural bristles absent 7
Pteropleural bristles present; tibial bristles long and strong 10
7. Tibial bristles long and strong; Sc ending in R (Skuse, 1890*b*, Pl. xix, fig. 8) .... *Dynatosoma* Winn.
Tibial bristles small, at most a little longer than the diameter of the tibia 8

8. Second segment of palpi greatly enlarged ..... (*Cordyla* Winn.)
Second segment of palpi not enlarged 9
9. Base of posterior fork below or before that of the media; Sc rather long and normally ending in R ..... *Trichonta* Winn.
Base of posterior fork beyond that of the media, Sc ending free .. (*Phronia* Winn.)
10. A posterior fork present 11
No posterior fork 14
11. M_3 slightly divergent from M_2 apically, but parallel with or slightly convergent towards Cu_1; pleurotergites and pteropleurites generally quite large; costa ending at tip of R_5 (Skuse, 1888*b*, Pl. xxxii, fig. 15) ..... *Mycetophila* Mg.
M_3 parallel with M_2 throughout, but slightly divergent from Cu_1; pleurotergites and pteropleurites small; head usually fitting very closely into the front of the thorax 12
12. Pronotal lobes distinctly separated from the propleura, and provided with distinct long bristles; base of posterior fork hardly if at all before r-m; costa distinctly produced beyond tip of R_5 ..... (*Epicypta* Winn.)
Pronotal lobes only indistinctly separated from the propleura and without long bristles; base of posterior fork well before r-m 13
13. Costa produced beyond tip of R_5; second abdominal segment without ventral bristles ..... (*Platurocypta* End.)
Costa ending at tip of R_5; second abdominal segment with a pair of ventral bristles (Skuse, 1890*b*, Pl. xix, fig. 7) ..... *Delopsis* Skuse.
14. M_2 and M_3 slightly divergent; pleurotergites and pteropleurites large; middle tibiae without ventral bristles; R_1 and R_5 often rather closely approximated 15
15. Costa hardly produced beyond tip of R_5 ..... *Sceptonia* Winn.
Costa produced far beyond tip of R_5 ..... (*Platyprosthiogyne* End.)

Subfamily Ditomyiinae.

Genus Centrocnemis Phil.

This genus, which was sunk under *Symmerus* by Johansen, has been reinstated by Edwards to include the species of the neotropical and Australian regions. Two species have been described by Edwards from Tasmania, *C. fuscinervis* and *C. aculeata*. I know at least six other species from Tasmania and from Victoria, several of them being common to both States. Five species are known from New Zealand. The wing venation is given in Plate xxii, fig. 1.

Subfamily Diadocidiinae.

Genus Diadocidia.

This genus was so far known from Europe and North America only, where it is represented in each case by two species. It is represented in Tasmania by one species, which I found in very widely distant localities: Strahan, Hartz Mountains and National Park. It seems, therefore, to be widely distributed in that State, although not common. This species agrees in every detail of venation (see Pl. xxii, fig. 3) and other morphological features as given by authors; but the antennae which are given by them as being 17-segmented with the last one very small, are in reality 16-segmented, the last one ending in an apiculus carrying three small, curved setae, and which cannot be confused with an independent segment when the antennae are mounted on slides and examined under high power. The examination of the antennae was also made on the genotype *D. ferruginosa* Mg.

Subfamily Macrocerinae.

Genus Macrocera Mg.

For the venation see Skuse, 1888*b*, Plate xxxi, figs. 1 and 2. Only three species of this genus have been recorded by Skuse for New South Wales, two of which are also found in Tasmania. This genus is much better represented in New Zealand, where seventeen species have been found so far.

Subfamily CEROPLATINAE.

Genus NEOANTLEMON, nov.

Head somewhat flattened; eyes hairy, slightly emarginated above the base of antennae; ocelli three in a triangle, the middle one forward and noticeably smaller than the lateral ones, which are well distant from the eye margins. Antennae 2 + 14 segmented, noticeably longer, thicker and more flattened in the male; the flagellar segments somewhat longer than wide (in the male the antennae are nearly as long as the thorax, in the female only half as long). Mouth parts elongate, about as long as the head, the elongation being due to the extension of the clypeus; the palpi are therefore placed towards the end of the proboscis; palpi 4-segmented, the segments subequal. Pronotum well developed, not divided in the middle where there is a bridge which is also present, although not so evident, in many species of *Ceroplatus* and *Platyura*. Thorax of normal shape, the pleurotergites moderately swollen, bare, as well as the postnotum and the pleurae. Prothorax bristly. Mesonotum with small hairs on the disc, on which there are four bare vittae. Abdomen about twice as long as the thorax, with seven visible segments, flat in the male. Legs rather slender; tibiae with rows of inconspicuous small bristles; tibial spurs 1.2.2, the internal ones larger; posterior tibiae with internal and external apical combs. Claws toothed; empodium and pulvilli not distinct. Wings with microtrichia only, venation similar to that of *Platyura* (see Pl. xxii, fig. 4). All longitudinal veins reaching the wing margin, except sometimes the An vein which is somewhat undulated.

Genotype, *N. apicalis*, n. sp.

Another species occurs also in New South Wales (in Nicholson's collection). This genus is clearly distinguished from *Antlemon* by the characters given in the key to the genera. In some respects it comes near to *Rhynchoplatyura*, the pronotum not being actually divided in the middle, although not really much more developed than in certain species of *Ceroplatus*; besides, *Rhynchoplatyura* has no regular hind tibial combs and the labella are very elongated and thin.

NEOANTLEMON APICALIS, n. sp.

♂. Head with its appendages, thorax and abdomen completely black, little shining. Halteres orange; front coxae partly obscured, orange externally and distally; the others as dark as the body. Femora orange, the hind ones dark on their distal third; tibiae rather darker than the femora; tarsi brown, abdomen flat with subparallel sides, its pubescence, as well as that of the thorax, dark; hypopygium of the simple type, like that of *Platyura*. Wing as in Plate xxii, fig. 4; hyaline, the last apical fifth infuscated.

Length of wing, 4 mm.

♀. Similar to male, front coxae more extensively orange, hind femora not darker apically, abdomen fusiform, not flat. Posterior border of sternites obscure orange. End lamellae dark. Apical infuscation of wing darker.

Type.—Eaglehawk Neck, Tasman Peninsula, 23rd November, 1922 (Tonnoir). Allotype: Burnie, 26th October, 1922 (Tonnoir). Paratypes: Eaglehawk Neck, with the type; Cradle Valley, 23rd January, 1923; National Park, 16th December, 1922.

Genus ANTRIADOPHILA Skuse.

Four species of this genus have been described by Skuse. I have seen the paratypes of three of them, but in none of these are the mouth parts elongate.

The genus is therefore to be distinguished from *Pseudoplatyura* only by the number of antennal segments, contrary to what is given in Edwards' table (page 522). The genus is apparently not known outside Australia.

Genus Pseudoplatyura Skuse.

This genus was proposed for one species, *P. dux*, which differs only from the species of the preceding genus by an additional segment on the antennae. As so little difference exists between them, it is to be wondered if it would not be wiser to unite all these *Platyura*-like species with less than sixteen antennal segments, in one single genus. *Pseudoplatyura* would have priority. A species of *Pseudoplatyura* is also found in New Zealand. The genus seems so far to be restricted to the Australasian regions.

Genus Ceroplatus Bosc.

In his recent study of the subfamily Ceroplatinae (These Proc., 1929, 173) Edwards included *Cerotelion* Rond., *Heteropterna* Sk., and *Placoceriates* End. as subgenera of *Ceroplatus*. This procedure is evidently right for *Cerotelion* and perhaps for *Placoceriates*, but not so evident for *Heteropterna* Sk., of which I have seen several specimens in Skuse's collection. On account of the swollen hind legs and the rounded head with large eyes nearly touching on the face (at least in the males), these flies have the peculiar facies of small Bibionidae; the first antennal segment is normal, not in shape of a "benitier" as in *Ceroplatus*.

If one accepts Edwards' interpretation of the genus *Ceroplatus*, four Australian species can be referred to it: two belonging to his subgenus *Mallochinus* and two to *Heteropterna*; both subgenera are peculiar to Australia.

Genus Platyura Meig.

The known Australian species of this genus are comprised in seven of the nineteen subgenera recognized recently by Edwards as follows: *Isoneuromyia* Brun. (one species), *Pyrtaula* Edw. (three), *Rypatula* Edw. (one), *Neoplatyura* Mall. (four), *Xenoplatyura* Mall. (four), *Proceroplatus* Edw. (one), and *Lutarpya* Edw. (one).

The key to these subgenera and others is given by Edwards (These Proc., 1929, 163). The last one only is peculiar to Australia, but the second and third are found in Australia and New Zealand, whereas the others are more or less cosmopolitan. Four of the Australian species of *Platyura* are doubtfully referred to these subgenera; a study of Skuse's type is necessary before Edwards' allocation of *P. gracilis* Sk. to *Rypatula*, *P. monticola* Sk. to *Neoplatyura*, *P. contingens* Sk. to *Xenoplatyura* and *P. graphica* to *Proceroplatus* can be confirmed.

Genus Arachnocampa Edw.

This genus is common to Tasmania and New Zealand. The Tasmanian species, *A. tasmaniensis* Ferg., has, like the New Zealand one, a luminous larva living in caves. The morphology of this larva is very close to that of *Ceroplatus* larvae, some of which are also luminous in Australia. The wing venation is shown in Plate xxii, fig. 2.

Genus Nicholsonomyia, nov.

Head rounded; eyes hairy, round, with only a very slight emargination above the base of antennae. Clypeus slightly produced. Palpi 4-segmented, the first segment little distinct, the second dilated, the last two subequal. Antennae 2 + 14

segmented, rather thick, somewhat flattened, the segments of the flagellum about as wide as long; the whole antennae as long as the mesonotum. Ocelli three, equal in size, the median one placed more forward, all on a somewhat raised portion of the vertex. Pronotum well developed, not interrupted in the middle. Mesonotum highly arched, the scutellum very small and densely hairy. The postnotum moderately large, but produced so as to overhang the base of the abdomen up to about the middle of the first segment. The mesonotum, scutellum and postnotum form an uninterrupted curve when seen in profile. The different sclerites of the mesopleurae bare. The pleurotergites produced in the shape of a keel. Abdomen in female with seven visible segments and with a strong waist, the first and second segments being much narrower than the following ones; the segments subcylindrical so that the abdomen is very similar to that of *Polistes*; last segments gradually diminishing in size, the end of the abdomen being, therefore, pointed. End lamellae projecting. Legs rather long. End tibial spurs 1.2.2, the internal ones longer. Internal and external hind tibial combs present; tibiae and tarsi with fine setae arranged in definite straight rows, except at tip of tibiae which carry as well some rows of small bristles. Claws toothed. Empodium and pulvilli not distinct. Wing so large as to reach the tip of the abdomen when folded and characterized by the presence of a fold-like basal extension of M. All the rest of the venation (see Pl. xxii, fig. 5) similar to that of *Platyura*, all the veins reaching the wing margin. Concave folds are also present between R_1, Rs and M_1.

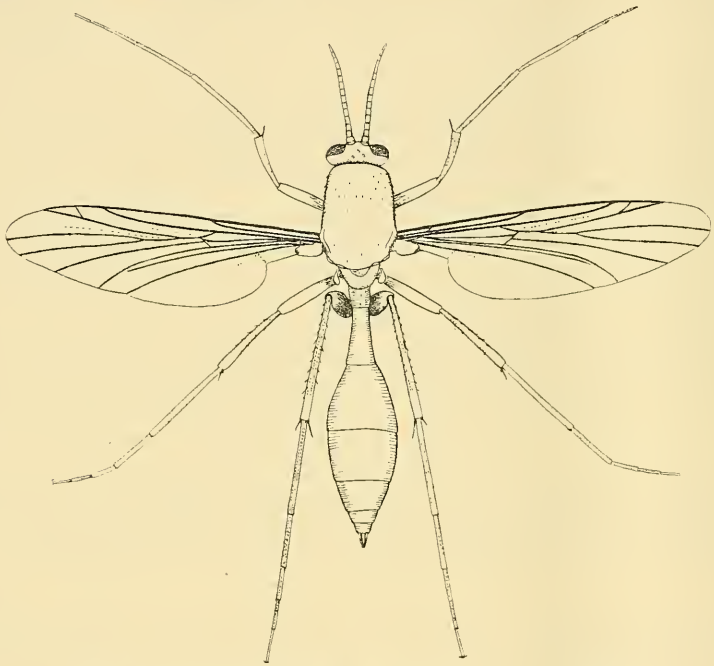
Genotype, *N. vespiformis*, n. sp.

This genus is characterized chiefly by the shape of the abdomen which has a strong waist and is otherwise shaped like that of *Polistes*, but this may be a sexual character, the male being still unknown and dimorphism in the shape of the abdomen is usual in the Ceroplatinae. The closest relationship of this new genus is with *Apemon* and *Platyura*, from which it differs, besides the characteristics given in the key, by the antennae more flattened, eyes not distinctly emarginated, palpi with second segment incrassate, propleurae strongly bristly, claws pectinate, empodium absent, abdomen pedunculate and rounded. The structure of the thorax is remarkable and quite different from that of *Apemon* (*Platyura marginata*), for instance, in which the arrangement of the head, thorax and abdomen is such that the insect appears humpy, like most Mycetophilidae, the head being scarcely visible from above. In *Nicholsonomyia*, on the contrary, the thorax is redressed in such a way that the head is quite visible from above and the postnotum overhangs the base of the abdomen. This conformation, which adds to the wasp-like appearance of the insect, is also found in some of the New Zealand forms of *Platyura*, like *P. harrisi* Tonn., *P. philpotti* Tonn., etc., but in these species the abdomen is quite flat in the females and there is no vein-like fold in the basal cell of the wing. The strongly projecting pleurotergites and postnotum, between which the halteres are lodged in a hollow, are common to these forms and to *Nicholsonomyia*.

Nicholsonomyia vespiformis, n. sp.

♀ (Text-fig. 2). General coloration brown, more ferruginous in parts and with some yellow markings. Head: Vertex brown; occiput ferruginous; face yellow; antennae and palpi orange; labellum brown. Mesonotum ferruginous-brown with three darker rather indistinct vittae. Pleurae blackish-brown; also the coxae which are yellowish towards the tip. Legs brown, knees and tip of tibiae as well as base of tarsi yellowish. Abdomen ferruginous-brown. Base of tergites

1, 2 and 3 yellow, that of segment 2 more extensively; sternites 1 and 2 completely yellow; tergites and sternites 4 to 7 with narrow yellow posterior border. End lamellae yellowish. Halteres yellowish, the knob mostly brown. Wings (Pl. xxii, fig. 5) noticeably infuscated, the tip being darker and the anterior border yellowish; vein yellowish-orange. Pubescence of the metathorax yellowish, short and adpressed. No bristles, except a small tuft above the wing base, also a more dense tuft on the propleurae. Scutellum completely covered with a dense adpressed pubescence; that of the abdomen also adpressed and more or less light brown, darker and denser on tergite 1.



Text-fig. 2.—*Nicholsonomyia vespiformis*, n. sp.; female.

Wing length, 9 mm. Body, 11·5 mm. (without antennae). This is one of the largest Mycetophilids, with some species of *Nervijuncta*.

Holotype: Port Macquarie, 19th April, 1924, A. J. Nicholson. In Sydney University collection.[1]

Subfamily Lygistorrhininae.

Lygistorrhina Skuse.

This genus was erected by Skuse for a single species from New South Wales, *L. insignis*. Since then the genus has been recorded, according to Edwards, from South America, West Indies, Africa, Ceylon, and Borneo. The typical wing venation (see Skuse, 1890*b*, Plate xix, fig. 1) and the exceedingly elongate mouth parts give to these forms a special rank among the Mycetophilidae.

[1] The account of the peculiar circumstance of the capture of this remarkable insect has been given by Dr. Nicholson in *The Australian Zoologist*. Vol. 5, 1927, 58.

Subfamily Sciarinae.

Sixty species of *Sciara* have been described with much care by Skuse. However, a revision of his types and a careful study of their genitalia should be made before any accuracy could be reached in the determination of the numerous species which are found everywhere in Australia. Besides, a certain number of species described by him as new are certainly introduced ones. This may be true also of the only recorded species of the genera *Trichosia* and *Zygoneura*. The only species of *Austrosciara*, *A. termitophila*, is an inquiline in termites' nest.

Subfamily Manotinae.

Genus Manota Skuse.

This genus is represented in New Zealand and is known from many other parts of the world, South America, West Indies, Seychelles, Ceylon and Europe. It will very likely also be found in Australia sooner or later.

Subfamily Sciophilinae.

Genus Mycomyia Rd.

Four species have been described by Skuse under the generic name of *Sciophila*. The wing venation is figured by him (1890*b*, Plate xix, fig. 3). This genus is very well represented in Tasmania, where I have found about fourteen species, some of which, however, may be identical with some of those already described from the mainland. Only three species are known from New Zealand.

Genus Neoempheria Skuse.

One species only has been recorded and described by Skuse from New South Wales. The wing venation characterized by the fold between Rs and M_1 is depicted by Skuse (1890*b*, Plate xix, fig. 4). The genus is known also from Europe, United States of America, East Indies, West Indies and South America. Edwards mentions that it is better developed in the tropics than in the temperate regions. It has not yet been found in New Zealand.

Genus Pareudicrana, nov.

Head relatively small; eyes hairy and perfectly round; only the lateral ocelli present and touching the eye margins; face produced; palpi 4-segmented, rather long; antennae filiform, 2 + 14 segmented. Scape and pedicel cyathiform. Segments of the flagellum cylindrical, three to five times as long as wide, the antennae being, therefore, fairly thin, about twice as long as the head and thorax in the male, and shorter in the female. Thorax highly arched. Mesonotum with long bristles, chiefly on the sides, as well as the normal pubescence. Propleurae bristly. Anepisternites bare. Pleurotergites and postnotum bristly, the former rather bulging. Abdomen long and thin in both sexes, about four times as long as the thorax; cylindrical in the male, gradually but slightly thicker distally in the female. Seven segments are visible in the female and eight in the male. Hypopygium of the simple pincers type. Legs slender. Tibiae with three to four rows of small bristles about equal to the diameter of the tibiae. Small setae irregularly arranged. Tibial spurs 1.2.2, of equal size. Only hind internal comb present. Claws, especially the hind ones, distinctly pectinate at the base. Empodium very small. Wings not quite as long as the abdomen; microtrichia and macrotrichia present on the membrane; the latter more sparsely distributed towards the

base of the wing. Venation as shown in Plate xxii, figure 6. Cell R_1 more or less elongate. Posterior fork distinctly proximad to the median one or nearly under it. Costa produced over the tip of R_5.

Genotype, *P. monticola*, n. sp.

The two Australian species agree quite closely with *Eudicrana*, a monobasic genus from North America, in having only two ocelli which are in contact with the eye margins and in having an almost identical venation. However, in spite of Loew and Johansen's good description, some rather important points have been left out, such as the eyes and antennal structures and also the general habitus but for the mention by Loew, that the body is similar to that of *Platyura*. The slender habitus of the two Australian forms which is similar to that of *Leptomorphus* on account of the long cylindrical abdomen, leads me to believe that the relationship between the Australian species and the American one might not be as close as the description of the latter seems to suggest. Indeed, the fact that Loew, who had a female before him when erecting the genus *Eudicrana*, compares the body to that of *Platyura*, seems to imply that *E. obumbrata* is not a specially slender insect and that its abdomen is flat as in most females of *Platyura*. I feel, therefore, justified in erecting the new genus for the two Australian species.

Pareudicrana monticola, n. sp.

♂. Head brown, clypeus paler; proboscis and palpi as well as base of antennae orange. Flagellum brown. Disc of mesonotum greyish-black, its margins and scutellum testaceous. Pleurae brown, somewhat more shining than the mesonotum. Postnotum paler above. Dark bristles on prothorax and round the mesonotum, none on the disc where the pubescence is yellowish. Bristles of pleurotergites and postnotum yellowish. Coxae yellowish with infuscated apex, on mid and hind pairs; all trochanters brown, as well as base of hind femora which is yellowish as well as the tip, the latter dark at apex, tarsi brownish, median tarsi very long, the first segment one and a half times as long as the tip. Halteres with yellow stem and black knob. Abdomen shining, dark brown, except the base of segments 3 to 4 and hypopygium. Abdominal pubescence pale. Wing venation as in Plate xxii, fig. 6. The large brown fascia on the small cell extending on the median fork and the apex extensively brown.

Length of body, 7 mm.; wing, 5½ mm.

♀. On the whole the coloration is paler than in the male. The face is dark orange. The mesonotum shows three indistinct, very wide and confluent dark vittae. Basal half of abdominal segments, except the first and last, yellowish orange. Lamellae dark orange.

Length of body, 8 mm.; wing, 6 mm.

Holotype: Hartz Mountain, Tasmania, 9th December, 1922 (Tonn.). Allotype: With the type.

Pareudicrana nicholsoni, n. sp.

♀. Head testaceous, brown only on the vertex, round the two ocelli; mouth parts yellowish, as well as the base of the antennae; flagellum, except the base of the first segment, brown. Mesonotum mostly testaceous anteriorly with three dark median vittae which fuse at the back where the notum is mostly brown; on each side there is a post-humeral roundish brown spot. Scutellum brown, except at base. Postnotum and sides of thorax of a dirty testaceous brown coloration. The bristles of the thorax are more numerous than in the preceding species;

they are present not only on the side margins of the mesonotum, but on its anterior border and along the three dark lines. Bristles on postnotum and pleurotergites black. Abdomen dark brown. Base of segments three to six yellowish-orange; venter more extensively pale, end lamellae dark orange. Halteres yellowish. Legs yellowish. Sides of coxae and base of posterior femora somewhat infuscated. Tarsi dark.

Wing: Sc_2 placed above base of Rs, cell R shorter than one-third of the wing length; R_4 present closing the little marginal cell and placed at the level of the tip of Sc_1; section of M from r-m to the median fork about twice as long as r-m; posterior fork under the origin of Rs and consequently distinctly more proximad than the median fork; wing membrane hyaline on the basal half, evidently, but not strongly infuscated on apical half.

Length of body, 7½ mm.; wing, 6 mm.

Holotype: Sydney, 10th July, 1923 (A. J. Nicholson).

Genus Allocotocera Mik.

This genus, formerly recorded from Europe and North America, has recently been found to be rather well represented in New Zealand, where four species have already been discovered. Three species collected by me in Tasmania agree well with the New Zealand forms and must be referred to this genus. The wing venation is given on Plate xxii, fig. 7 .

Genus Neoallocotocera, nov.

Head rather flattened dorsoventrally; eyes hairy, emarginated above the base of antennae; three ocelli in a line, median one smaller, the lateral ones far from the eye-margins. Clypeus somewhat produced. Palpi small, 4-segmented, the first segment scarcely distinct, the others subequal to each other. Antennae somewhat flattened, 2 + 14 segmented, not quite as long as the thorax. Segment of flagellum wider than long. Thorax not highly arched. Postnotum rather elongate. Anepisternites, pleurotergites and postnotum hairy or bristly. Subalar knob bare. Abdomen moderately slender, a little longer than the thorax. Seventh segment visible. Legs rather short. Tibial spurs 1.2.2, of nearly equal size. Mid and hind tibiae with two rows of small bristles, internal hind tibial comb present. Wings with both micro- and macrotrichia present; Sc long; Sc_2 absent; base of Rs perpendicular on R_1; r-m small, sublongitudinal; stem of median fork rather short; posterior fork placed nearly under the former; An. interrupted, M_3 not always connected with Cu_1 (see Pl. xxii, fig. 8).

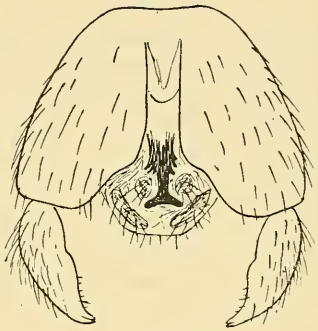
Genotype, *N. fusca*, n. sp.

This genus is closely related to *Allocotocera*, from which it differs mainly by the presence of both micro- and macrotrichia, the absence of Sc_2, the subalar knob bare, and the head structure which is more elongate, the lateral ocelli being, however, much more remote from the eye-margins. By its venation this genus comes near *Synapha*, from which it differs, among others, by the macrotrichia present on the wing membrane and the bristles on the side of the thorax.

Neoallocotocera fusca, n. sp.

♂. Head, thorax and abdomen black; rather shining; clypeus, mouth parts and base of antennae brown; hairs of the mesonotum irregularly arranged and completely blackish, as well as that on the other parts of the body. Halteres ferruginous, base of the knob darker, the knob as long as the stem. Coxae and

femora blackish; tibiae dark, ferruginous, as well as the base of the tarsi; the whole front pair including the coxae ferruginous. Tibial spurs orange. Wings slightly infuscated, somewhat more extensively on the anterior border; venation as on Plate xxii, fig. 8; macrotrichia not quite as dense towards the base of the wing; hypopygium as in Text-figure 3. Forceps with two blunt teeth at apex.



Text-fig. 3.—Hypopygium of *Neoallocotocera fusca*, n. sp.

Length of body, 2 mm.; wing, 2 mm.

Holotype: Cradle Valley, Tasmania, 12th January, 1923 (Tonn.).

Another much damaged specimen from Sassafras, Victoria, may belong to the same species, although M_3 is more or less detached at the base, but more so on the one wing than on the other.

Genus Aneura Marshall.

This genus was recorded only from New Zealand, where eleven species had been found. One species collected by me in Tasmania belongs indubitably to the genus; it is very closely related to *A. fusca* Tonn. In this species R_4 is present and Sc_2 also, but it is faint and placed near the base of S_2. The median fork is strong and both micro- and macrotrichia are present. Wing venation as on Plate xxii, fig. 10.

Genus Tasmanina, nov.

Head somewhat flattened dorsoventrally, nearly as wide as long; eyes scarcely distinctly pubescent, emarginated above base of antennae; ocelli 3, the median one smaller and placed only a little more forward; distance from the eye-margins to the lateral ocelli greater than the diameter of the latter; face little produced, hairy. Palpi moderately long, 4-segmented, the first very short, the last twice as long as or longer than the others. Antennae longer than the thorax (in the male), 2 + 14 segmented. Segments of the flagellum cylindrical, half to four times as long as wide. Thorax highly arched, the postnotum being half as long as the mesonotum. Pleurotergites bulging and hairy, as well as the postnotum and hypopleurites, but the anepisternites bare. Abdomen slender, cylindrical and elongate, about two to three times as long as the thorax; seventh or even eighth segment visible in the male. Legs elongate, but not specially slender. Fore tibiae longer than metatarsi; tibial spurs 1.2.2, the internal ones a little longer; hind internal apical tibial comb present, the external ones represented

by only three setae; tibial bristles small, not longer than the diameter of the tibiae, arranged in four rows on mid and hind tibiae. Claws dentated. Empodium distinct. Wings as on Plate xxii, fig. 9; Sc_2 near origin of Rs; base of that vein perpendicular, but r-m longitudinal and about equal to the stem of the median fork; posterior fork a little more proximad; An. interrupted; both micro- and macrotrichia present. Costa produced over the tip of Rs.

Genotype, *Tasmanina gracilis*, n. sp.

This genus is a link between the group *Leptomorphus* and the group *Sciophila*, as it has the hind tibial apical combs and the fork of Cu is proximal. The general habitus is that of *Leptomorphus*, but the venation is very different, in fact, it is nearly identical with that of *Boletina* from which, however, all other morphological features separate it very widely. The venation has also some similarity with that of *Morganiella*, but here the posterior fork is complete and the microtrichia are present. The venation differs from that of *Leptomorphus* by the sublongitudinal position of r-m, the costa reaching over the tip of Rs, and the two forks being at the same level; micro- and macrotrichia are both present. It shows relationship with the group *Sciophila* by the presence of the hind tibial combs and the chaetotaxy of the body, but the venation does not agree with any genus of that group in which the posterior fork is present; in that respect it comes nearer to *Morganiella*, as explained above, but in that genus the microtrichia are absent and its thickset habitus is strikingly different. In *Morganiella* M_3 is not complete at the base and the anepisternites are hairy.

Tasmanina gracilis, n. sp.

♂. Head, thorax and abdomen black, rather shining; mouth parts of a dirty yellow coloration; antennae dark brown, base of flagellum reddish; humeri ferruginous. Pleurae slightly grey-dusted, pubescence and bristles of thorax and abdomen pale. Eighth abdominal segment visible. Hypopygium dark, of the simple forceps type. Halteres yellow, legs with coxae blackish; the front pair paler distally. Femora and tibiae yellowish-brown; mid and hind tibiae darker at base and on apical third, more extensively so on the hind pair; tarsi gradually darker brown towards the tip. Bristles of tibiae smaller than the tibial diameter. Antennae twice as long as the thorax. The segments of the flagellum two to four times as long as wide. Wings very slightly and uniformly infuscated; venation as on Pl. xxii, fig. 9. Abdomen three times as long as the thorax.

Length of body, 5 mm.; wing, 4 mm.

Holotype: Mt. Wellington, Hobart, 18th November, 1922 (Tonn.).

Another species from Zeehan differs by comparatively shorter antennae and abdomen, and some details of venation.

Genus Phthinia Winn.

One species of this genus characterized by the extreme slenderness of the legs and abdomen has been found near Hobart. It agrees perfectly well with the European and New Zealand species; its venation is almost identical with that of the latter and it is depicted on Plate xxii, fig. 11.

Genus Stenophragma Skuse.

Skuse described three species of this purely Australian genus. I know two others, one from Tasmania, which is very closely related to *S. meridionalis* Skuse, and another from Victoria. In this genus the macrotrichia are well

developed on the base of the wing, as well as on its distal parts, contrary to what is given in Edwards' key to the genera. One would, however, be tempted to fuse this genus with *Sciophila*, but here Sc is not quite as long, scarcely reaching over the base of Rs, whereas the posterior fork is short, and the last section of Cu_1 is bent so as to end perpendicularly on the wing margin. The anepisternites are bare, the body and the legs are more slender and wings have usually a conspicuous dark pattern. The wing venation is given by Skuse (1888*b*. Plate xxxi, fig. 9).

Genus Sciophila Winn.

Subgenus Austrosciophila, nov.

A species which I collected in Tasmania could be included in *Sciophila*, with which it corresponds quite well, with the exception of the anepisternites which are bare. As this character seems to have more than a specific importance in the Sciophilinae, I propose to erect a subgenus, *Austrosciophila*, to receive it. The other characters which agree closely with those of *Sciophila* are as follows:

Head roundish, as high as wide; eyes hairy, emarginated above antennae; ocelli three, the middle one smaller and placed a little more forward, the lateral ones distant from the eye-margins about half their own diameter. Antennae as long as the thorax, 2 + 14 segmented. Segments of flagellum two to three times as long as wide. Palpi 4-segmented, the first shorter, the last distinctly longer than the others. Thorax well arched. Sternopleurae, anepisternites and subalar knob bare. Pleurotergites and postnotum bristly. Hypopleurites with one or two bristles. Bristly pubescence of mesonotum irregularly arranged. Abdomen about twice as long as the thorax, with seven visible segments. Legs moderately long. Front metatarsi subequal to tibiae. End tibial spurs 1.2.2, of equal length; claws dentated; empodium distinct; tibial bristles small, arranged in four rows and only hind internal tibial apical combs present, but little distinct. Wing venation as shown on Plate xxii, fig. 12. Only the microtrichia present on the wing membrane.

Subgenotype, *A. solitaria*.

Austrosciophila solitaria, n. sp.

♀. Head and mesonotum dull blackish-grey; clypeus, mouth parts, scape and pedicels blackish. Base of first flagellar segment yellowish, the rest dark brown. Sides of thorax and postnotum brownish and a little more shining than the notum, although quite distinctly grey-dusted. Abdomen shining blackish-brown; all bristles and pubescence of the body yellowish. Halteres yellow. Apex of antennae dark. Legs, including coxae, yellow, tarsi darker. Wings hyaline; venation as on Plate xxii, fig. 12.

Holotype: Mount Field, National Park, 21st December, 1922 (Tonn.).

Genus Trizygia Skuse.

This genus, erected by Skuse for a single species, remains so far typically Australian. However, a very closely allied one has been recently found in New Zealand. Besides the genotype, *T. dux*, another species occurs in New South Wales which I found in Dr. Nicholson's collection and two others were collected by me in Tasmania in various localities; they differ from the mainland species by the dark markings of their wings.

Genus PARATRIZYGIA, nov.

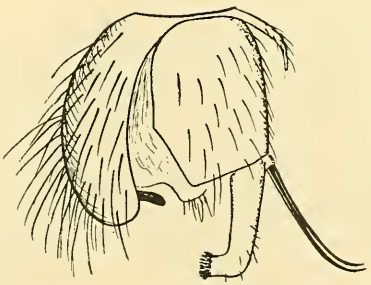
Head flattened dorsoventrally, a little higher than wide; eyes hairy, emarginated above base of antennae; ocelli 3, the median one much smaller and only a very little more forward than the lateral ones which are touching the eye margins; antennae rather longer than the thorax, 2 + 14 segmented. Segments of flagellum cylindrical, longer than wide. Palpi 4-segmented, the first very small, last somewhat smaller than the others. Thorax moderately arched. Pubescence and bristles of mesonotum irregularly arranged. Only the pleurotergites and postnotum with some pubescence, which is rather scanty on the latter. Abdomen only a little longer than the thorax; seventh segment barely visible. Legs rather short and robust. Mid and hind tibiae with two rows of subdorsal bristles which are shorter than the tibial diameter. Apical spurs 1.2.2, the internal ones shorter. Claws dentated. Empodium distinct, only the internal hind tibial combs present. Wing venation as on Plate xxiii, fig. 14; Sc_2 absent; R_4 present; M_{1+2} not branched; M_3 detached; An. not distinct; micro- and macrotrichia both present, the latter mostly on the apical portion of the wing.

Genotype, *P. conformis*, n. sp.

This genus differs from *Trizygia* by the absence of Sc_2 and the presence of R_4, which forms the little submarginal cell typical of the Sciophilini and by the absence of hairs on both anepisternites and subalar knob; in this last respect it comes near *Aphelomera*, from which it differs, however, by the much more robust habitus and complete M_1. It differs from *Neotrizygia* Tonn. in r-m being oblique and not longitudinal and in Sc ending in the costa and not in R_1, besides having the sides of the thorax bare.

PARATRIZYGIA CONFORMIS, n. sp.

♂. Head, thorax and abdomen blackish-brown, somewhat shining; humeri ferruginous; mouth parts and antennae dark brown. Halteres yellow, the knob elongate. Legs somewhat paler brown than the body, especially the front pair. Tibial spurs orange; all bristles and hairs of body brown. Wing as in Plate xxiii, fig. 14; apical portion infuscated especially on the anterior border. Hypopygium as in Text-figure 4.



Text-fig. 4.—Hypopygium of *Paratrizygia conformis*, n. sp.

Length of wing and body, 2·5 mm.

Holotype: Cradle Valley, Tasmania, 29th January, 1923 (Tonn.).

Another species with paler legs and body has also been collected at Mt. Farrel and Mt. Field in Tasmania.

Genus Aphelomera Skuse.

This very characteristic genus was erected by Skuse to receive one species from New South Wales, *A. sydneyensis*. Besides this one, I know two others from Tasmania, so that many more may be expected in the future. Seven species have been found so far in New Zealand. The genus is common to Australia and New Zealand. The wing venation is illustrated by Skuse (1888*b*, Plate xxxii, fig. 13).

Genus Paramorganiella, nov.

Head somewhat flattened dorsoventrally, longer than broad; eyes scarcely hairy and only very little emarginated near the base of the antennae; ocelli 3, nearly in a line, the middle one smaller than the lateral ones; far removed from the eye-margins; antennae as long as thorax; 2 + 14 segmented. Segments of the flagellum longer than wide, except the last two; mouth parts elongate, about two-thirds as long as the head, at least in the male, the elongation being due to that of the labium. Palpi long, the third segment modified so that both palpi can be used as prehensile organs in a mandible-like manner. Thorax moderately arched. Anepisternum and subalar knob bare but pleurotergites, postnotum and hypotergites hairy. Abdomen not quite twice as long as the thorax. Seventh segment visible. Legs moderately long. Hind tibiae with three rows of small bristles, two subdorsal and one internal, whereas the mid tibiae have a ventral row as well. Apical tibial spurs 1.2.2, the internal ones somewhat longer; only hind internal combs present but not very evident. Claws simple; empodium distinct. Wing venation as on Plate xxiii, fig. 15; Sc reaching half the wing length; Sc_2 placed near its end; r-m longitudinal; costa produced over the tip of R_5; M_3 incomplete at base; An. interrupted; micro- and macrotrichia present, the latter erect but not pointing towards the base of the wing.

Genotype, *P. adventurosa*, n. sp.

By its venation this genus comes near to the New Zealand genus *Morganiella* Tonn., especially in the arrangement of the anterior veins, Sc being long and Sc_2 placed after the origin of Rs, whereas the basal section of this vein is transverse and r-m longitudinal. However, in this new genus it is the anterior fork which is incomplete, M_2 being detached at the base.

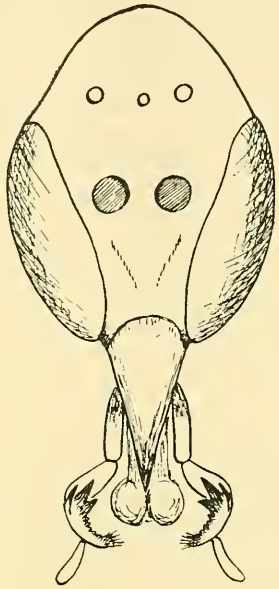
Paramorganiella adventurosa, n. sp.

♂. Head, thorax and abdomen shining black; face and mouth parts dark orange; base of antennae ferruginous, the rest brown. Humeri yellow, as well as halteres which have an elongated knob. Front legs yellowish, except base of coxae and the end of tarsi. Mid and hind legs with brown coxae and femora. Tibiae yellowish, the hind ones dark at tip. Tibial spurs orange. Wings hyaline, very slightly infuscated on the anterior border. Length of body and wing, 3 mm.

Holotype: Adventure Bay, Bruny Island, Tasmania, 30th December, 1922 (Tonn.).

The adaptation of the palpi of this species so as to make them suitable as prehensile organs is most extraordinary. This feature is depicted in Text-figure 5 and gives a better idea of the modification of the third segment of the palpi than a long description would do. The fact that their teeth and serrations are opposed and come to meet at the end of the proboscis suggests that they fulfil the rôle of mandibles, although what is known of the diet of the adult Fungus gnats does

not allow us to assume that they have carnivorous habits. Some species live on pollen, but it is hardly possible that such an armature would be needed to gather it; the labella are usually quite sufficient for this purpose.



Text-fig. 5.—Head of *Paramorganiella adventurosa*, n. sp. seen from above, but with antennae removed and showing the mouth parts with the peculiar adaptation of the palpi as prehensile organs.

The unique specimen of this species is a male, the female being yet unknown. It is, therefore, possible that this is a sexual character and that the palpi of the latter sex are quite normal. Such a modification of the palpi is quite unknown among the Diptera, but A. Philpott has described similar features in some Australian Lepidoptera (Proc. Linn. Soc. N.S.W., 1, 1925, 381) which are present also only in the males and the function of which remains unexplained. In that case the grasping function takes place between two segments of one palpus, whereas in *P. adventurosa* the grasping is done between both palpi.

Genus Synapha Mg.

A species closely related to some New Zealand ones has been found in different localities in Queensland and Southern Tasmania. The wing venation is given on Plate xxiii, fig. 16. This genus is known so far only from Europe, South America and New Zealand where seven species have been found. The presence of R_4 is not diagnostic; it is missing in the Tasmanian species.

Genus Austrosynapha, nov.

Head nearly round; eyes not distinctly emarginated near the base of antennae, distinctly hairy; ocelli 3, median smaller and placed distinctly more forward; mouth parts but little produced; palpi 4-segmented, the first very small,

the others subequal; antennae longer than the thorax and rather thin; 2 + 14 segments. Segments of flagellum three to six times as long as wide; second segment with some long dorsal bristles. Thorax highly arched and with long curved bristles on dorsum. Abdomen elongate, about twice as long as thorax; second segment visible. Legs rather slender. Tibiae with two or three rows of small bristles; tibial spurs 1.2.2, the internal ones slightly longer; internal hind tibial combs not evident, with only four setae. Empodium not distinct. Claws simple. Wings with Sc_1 rather long but abruptly interrupted; Sc_2 absent; costa produced well over the tip of Rs; basal section of Rs perpendicular; r-m oblique and moderately long; stem of M_{1+2} rather long; this vein and its fork weak; M_3 also weak; An. incomplete (see Plate xxiii, fig. 17).

Genotype, *Austrosynapha hirta*, n. sp.

This genus differs from *Synapha* by Sc_1 ending free and Sc_2 absent. At first one would consider it as a subgenus of *Synapha*, but the venational character given by the incompleteness of Sc ranks rather high, perhaps unduly, in the classification of the Mycetophilidae. The reduction of Sc places this form between the Gnoristini and the Leiini but, as it is in all respects very close to *Synapha*, I think it will be preferable to include it in the former tribe.

Austrosynapha hirta, n. sp.

♀. Head, thorax and abdomen dull brown; the vertex darker, mouth parts and antennae brownish; base of the latter somewhat paler. Prothorax with three long curved bristles on each side converging inwards. Disc of mesonotum with three darker vittae converging behind, and along each of which runs a row of long curved bristles and some smaller hairs; elsewhere the notum is bare except on the sides. Two long apical scutellar bristles. Halteres with yellowish stem and dark knob. Legs, including coxae, yellowish. Femora and tibiae darker. Tarsi still darker. Pubescence and bristles brown. Wings hyaline; venation as on Plate xxiii, fig. 17.

Length of body and wing, 3·5 mm.

Type: Mt. Wellington, Hobart, 27th November, 1922 (Tonn.). Paratype: Burnie, 26th October, 1922 (Tonn.).

Genus Pseudalysinia, nov.

Head somewhat wider than high; eyes round, bare; fronto-clypeus circular, separated from the vertex by a deep circular suture; ocelli very close to eye-margin, but not quite touching; the median one missing. Labellum short, flat and round. Palpi rather long, 4-segmented, the first one small, the others gradually increasing in size, the second one incrassate. Antennae rather thick, filiform; 2 + 14 segmented, nearly as long as the body in the male, about half as long in the female. Segments of flagellum about four times as long as wide, densely hairy. Thorax moderately arched, overhanging the head as is usual in many Chironomids. Thorax with a few very indistinct microscopic hairs, but absolutely devoid of bristles. Abdomen subcylindrical in male, flattened dorsoventrally in female, with six visible segments only. Hypopygium of complicated structure, similar to that of some species of *Phronia*. Coxae relatively small for a Mycetophilid. Legs devoid of bristles. Only one tibial spur present on each leg and quite small. Claws toothed. Empodium large. Wings with Sc long, ending in R_1, basal section of Rs vertical; r-m somewhat oblique and short; stem of median fork very short.

shorter than r-m; posterior fork under that of the media; An. strong but abruptly interrupted (see Plate xxiii, fig. 18).

Genotype, *P. mimicans*, n. sp.

On account of its venation, this genus is very near *Dziedzieckia*, especially on account of Sc ending in R_1, but here R_1 is missing and the median and posterior forks are closer together; as far as other characters are concerned, the affinities are difficult to make out on account of its peculiarities, such as the conformation of the head with only two ocelli nearly touching on the eye-margin, and the structure of the fronto-clypeus; these characters, and also the general structure of the hypopygium, show some affinities with the Mycetophilini. Here, however, the antennae are erect, instead of recumbent as is mostly the case in the latter subfamily. Edwards (*in litt.*) suggested that there might be a relationship with *Ohakunea* Edw. of the Sciarinae, but the analogy is absolutely superficial and is suggested only by the similarity of colouring, bright orange thorax, black abdomen and smoky wings. *Pseudalysiinia* has no bridged eyes, Sc is long and ends in Rs, r-m is oblique, etc.; also the complexity of the hypopygium structure is not all Sciarinae-like. This genus must, I think, be placed amongst the Gnoristini on account of the bareness on the sides of the thorax and postnotum, the absence of microtrichia on the wing membrane, and the fact that the microtrichia are not arranged in definite rows as in the Mycetophilinae, and also on account of the long Sc_1, the long last section of R_1 and the seventh abdominal segment retracted. This genus is very remarkable amongst the Mycetophilidae by the complete absence of bristles on the body and legs and by the unique apical tibial spur remaining on each leg.

PSEUDALYSIINIA MIMICANS, n. sp.

♂. Head brown above, orange on face and below; antennae with first two segments orange, the rest deep black with black pubescence. Palpi brownish. Proboscis orange. Thorax bright orange, especially on the disc of mesonotum;

Text-fig. 6.—Hypopygium of *Pseudalysiinia mimicans*, n. sp.

on the whole, but little shining; deep post-humeral foveole and some along the side margin of mesonotum as well as in the front and at base of scutellum. Halteres and legs orange. Tibiae brownish, gradually infuscated distally, the front ones paler, tarsi blackish. Small tibial spurs orange. Abdomen dull velvety-black with sparse, darkish inconspicuous pubescence. Hypopygium of complex structure as shown in Text-figure 6. Wing evenly blackish; venation as on Plate xxiii, fig. 18.

Length of wing and body, 4 mm.

Holotype: Cradle Valley, Tasmania, 12th January, 1923 (Tonn.).

Female similar to male, antennae smaller, abdomen much wider distally, femora darker.

Allotype: Mt. Wellington, Hobart, 2nd December, 1922 (Tonn.). Paratypes: With the type in Adventure Bay, 30th December, 1922; Mt. Farrel, 9th February, 1923; King River, 4th February, 1923.

This most remarkable species mimics a small species of Braconid of the tribe Alysiini which is on the wing in the same localities as *P. mimicans* and which exhibits very exactly the same coloration of body and wings.

Genus Clastobasis Skuse.

One species, *C. tryoni*, from Queensland was included by Skuse in this genus, which is so far known only from Australia. The new genus *Paradoxa* Marsh. is very closely related, the only apparent difference being in the costa not produced over the tip of Rs, and An. not running into Cu in *Clastobasis*, the venation of which has been depicted by Skuse (1890*b*, Plate xix, fig. 6).

Genus Ateleia Skuse.

The venation of this genus is very close to that of the New Zealand genus *Cawthronia* Tonn., from which it differs in the presence of Sc_2, the interruption of M_1 at the base and the position of the origin of Rs, which is placed very near the tip of R_1. If this were the only difference between the genera, *Cawthronia* could be sunk under *Ateleia*, but as I have not seen the genotype of the latter, and as, from Skuse's description, it seems that *Ateleia* is a slender insect whereas *Cawthronia* is very thick-set, with short legs and short antennae, the segments of the flagellum generally much wider than long, I think they had better remain separate for the present. Only one species has been described by Skuse under this genus, *A. spadicithorax* from Bowral, N.S.W. Its wing venation is given by Skuse (1888*b*, Plate xxxii, fig. 11).

Genus Leia Mg.

One species from Tasmania, *L. fulva* Walk., is the only one recorded, and it has apparently never been found since; it is impossible to say from Walker's scanty description if it really belongs to the genus *Leia*. However, this genus exists in Tasmania, as I found there two other apparently undescribed species which agree well with the characteristics of the genus, except that in one of them M_3 is slightly detached at the base so that it comes near the venation of *Acrodicrania* in that respect. *Leia* is known from practically all over the world.

Genus Acrodicrania Skuse.

This genus seems to be well represented in Australia from whence four species have been made known by Skuse. I have seen besides these, two others in Dr. Nicholson's and Dr. Mackerras's collections, and I have found four in Tasmania which seem different from the mainland forms. In his key to the genera, Edwards distinguishes this genus from *Anomalomyia* Hutton by An. strong and distinct and by the absence of Sc_2. However, a study of the above-mentioned Australian species of *Acrodicrania* and of several New Zealand species of the genus *Anomalomyia* Hutton shows that there are no definite limits between the two

series of forms. In a specimen in Dr. Nicholson's collection, Sc_2 is present and An. is strong, whereas in some New Zealand species of *Anomalomyia* An. may be strong and in others it is faint or absent, while in one M_3 is slightly detached at the base, a character which is usually found in the Australian species of this group. I think, therefore, that it would be advisable to sink *Anomalomyia* under *Acrodicrania*, which has priority. There seems to be also little demarcation between *Acrodicrania* and *Leia*, as the only difference is found in the prolongation of the costa over the tip of Rs in the former genus and that M_3 is practically never detached at the base in *Leia*. The wing venation of *Acrodicrania* is figured by Skuse (1888*b*, Pl. xxxii, fig. 10).

Genus Tetragoneura Winn.

This genus, well represented in New Zealand by fourteen species, and known otherwise only from Europe, occurs also in Tasmania, where three species have been so far found. The wing venation is shown on Plate xxiii, fig. 13; R_4 may be either completely absent or present even in a given species.

Genus Paraleia, nov.

Head nearly as wide as high, eyes but slightly emarginated near the base of antennae but yet not round, and distinctly hairy; ocelli 3, in a line, the median one smaller, the lateral ones close to the eye-margins. but distant from them about their own diameter. Fronto-clypeus rounded and produced, palpi rather long, the segments gradually increasing in length. Antennae about as long as the thorax in the male, shorter in the female, 2 + 14 segmented. Segments of the flagellum about three times as long as wide. Thorax moderately arched; mesonotum bare on the disc, except for three rows of bristles and small hairs; pleurae and postnotum bare, about one and a half times as long as the thorax, seventh segment not visible. End lamellae of female much elongated. Legs rather long, tibial bristles long, arranged in rows on mid and hind tibiae, tibial spurs 1.2.2, subequal to each other. Claws toothed. Empodium well developed. Wing elongate; costa produced over the tip of Rs, otherwise the venation is identical with that of *Leia* (see Plate xxiii, fig. 19).

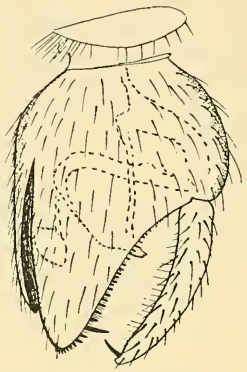
Genotype, *P. fulvescens*, n. sp.

This genus is closely related to *Leia* on account of its venation, both forks being complete, but the costa is produced over the tip of Rs. However, it differs rather widely in the non-bulging and bare pleurotergites, also in the shape of the head, with much narrower front, the ocelli not touching the eye-margins but grouped together; different features can be found also in the mesonotum, devoid of regularly disposed pubescence, but provided with five rows of small and large bristles, and also in the elongated wings.

Paraleia fulvescens, n. sp.

♂. Head orange, vertex brown; mouth parts orange; first three antennal segments orange; fourth and following ones more or less extensively orange at base and brown distally; last ones completely brown. Thorax orange, rather shining on the mesonotum, less so on sides and on postnotum; pronotum with two long yellow bristles curved inwards on each side, long curved bristles of the mesonotum brownish, those of the single acrostical series all small; edge of scutellum with two long bristles and a row of about six between them. Halteres yellow-orange. Abdomen with tergites mostly light brown, the first and second on

the disc only, the following ones completely, with the exception of a more or less narrow posterior border; venter and hypopygium orange, the latter as in Text-figure 7. Legs entirely yellow, the tarsi darker, mid tibiae with two internal, three



Text-fig. 7.—Hypopygium of *Paraleia fulvescens*, n. sp.

anterior and four dorsal bristles; hind tibiae with 2.4.4 bristles. Wings nearly uniformly yellowish with yellow veins. Venation as on Plate xxiii, fig. 19. Base of the radius carrying four strong bristles.

Length of body, 3 mm.; wing, 4 mm.

Type: Eaglehawk Neck, 28th November, 1922 (Tonn.).

♀. Similar to male, end lamellae as long as median segment of abdomen and apparently bi-segmented.

Allotype: St. Patrick River, 30th October, 1922. Paratypes: Tasmania: Wilmot, 8th January, 1923; Burnie, 1st February, 1923; Ferntree (Mt. Wellington), 11th November, 1922. New South Wales: Barrington Tops. Queensland: Townsville.

This does not seem to be *Leia fulva* Walker on account of the yellow wings with yellow veins.

Subfamily Mycetophilinae.

Genus Exechia Winn.

Five species of the genus, all from New South Wales, have been described by Skuse, who erected the new genus *Brachydicrania* to receive them. I know three other species from Tasmania, and one from Victoria, which do not seem to correspond to any of those described by Skuse. All these Australian species do not belong to the same group as the New Zealand ones, R_5 being less curved and M_1 scarcely, if at all, sinuous. The venation is figured by Skuse (1888*b*, Plate xxxii, fig. 17). This genus is distributed all over the world.

Genus Rhymosia Winn.

From the examination of Skuse's paratypes loaned by Dr. Nicholson, I see that *Symplasta annuliventris* is a species of *Rhymosia*, not an *Allodia* as suggested by Edwards (*Trans. Ent. Soc. Lond.*, 1925, 604), as An. is present and strong, as shown on Plate xxiii, fig. 20, which can be compared with that of the wing of a true *Allodia* shown in fig. 21. This vein is not shown in Skuse's drawing (1890*b*,

Plate xix, fig. 10). The vein depicted under the posterior fork appeared to be Cu_2, and it ends distad of the fork, whereas An. ends distinctly proximad to it. There is also another still undescribed species which seems to be very common in New South Wales; I have collected it also in Victoria and in many localities in Tasmania.

Genus Allodia.

This cosmopolitan genus has so far not been recorded from Australia, *Symplasta annuliventris* Skuse being in reality a *Rhymosia* as pointed out above. However, one species is known to me from different localities in Tasmania. Others representative of this genus will certainly be found on the mainland. Venation as on Plate xxiii, fig. 21.

Genus Dynatosoma Winn.

The species *D. sydneyensis*, which Skuse refers to this genus, is a species of *Rhymosia* apparently identical with *Rhymosia* (*Symplasta*) *annuliventris*, the hypopygium of a male paratype agreeing with that of a paratype of the latter species. However, I have not seen the types of either species, and without comparing them it would be premature to conclude as to the identity of the species. The female paratypes of both species which I have seen also agree in every respect. The vein An. is as distinct as in the male, but noticeably shorter. The tibial bristles of *D. sydneyensis* are not sufficiently long and strong and it is to be wondered why Skuse included the species in *Dynatosoma*, especially as he did not see any difference in the venation, his two figures 8 and 10 (1890*b*, Plate xix) being almost identical. He may have been misled by some slight difference due to sex, his type of *D. sydneyensis* being a female and that of *R. annuliventris* a male.

Genus Trichonta Winn.

Two species of this genus have been described by Skuse, each from a unique specimen, the types of which I have not seen. It is not possible to deduce from their descriptions whether he placed them in the right genus; judging from his figure of the venation (1888*b*. Plate xxxii, fig. 14) they might be some species of *Rhymosia*. I have not seen any other Australian representatives of the genus.

Genus Mycetophila Mg.

It is surprising that this genus is not better represented in Australia, as more than fifty species are so far known from New Zealand. I have found about fifteen species in Australia and Tasmania, some of which undoubtedly belong to the three described by Skuse and Walker. The wing venation is given by Skuse (1888*b*, Plate xxxii, fig. 15).

Genus Delopsis Skuse.

Only one species, *D. flavipennis*, the genotype, is known. The wing venation is figured by Skuse (1890*b*, Plate xix, fig. 7).

Genus Zygomyia Winn.

This genus, so abundantly represented in New Zealand by about thirty species, is known to me from Australia only by one species collected in Victoria (see venation, Plate xxiii, fig. 22).

Genus Sceptonia Winn.

Only one species, *S. ornatithorax*, has been included by Skuse in this genus. I have not seen the type, a unique specimen. Skuse does not give a figure of the venation, but from his description there seems to be no doubt as to the generic position of this species.

Summary.

In this paper a review is made of what was known of the Australian Mycetophilid fauna up to date. A list of the genera is given, to which twenty-one are added to those previously known from the different States, the total being forty-seven. Ten of these genera have been proposed as new.

The affinities of this Australian Mycetophilid fauna are discussed and some of the morphological features, especially the venation, necessary for classification are explained.

A key is given to all known subfamilies and genera of the world.

A peculiar adaptation of the palpi as a prehensile organ in a species of *Paramorganiella* is made known and illustrated. A second case of mimetic resemblance of a Mycetophilid, *Pseudalysiinia*, with a Hymenopteron is brought to light.

The wing venation of all the Australian genera or of those which have not been depicted by Skuse, is illustrated.

EXPLANATION OF PLATES XXII–XXIII.

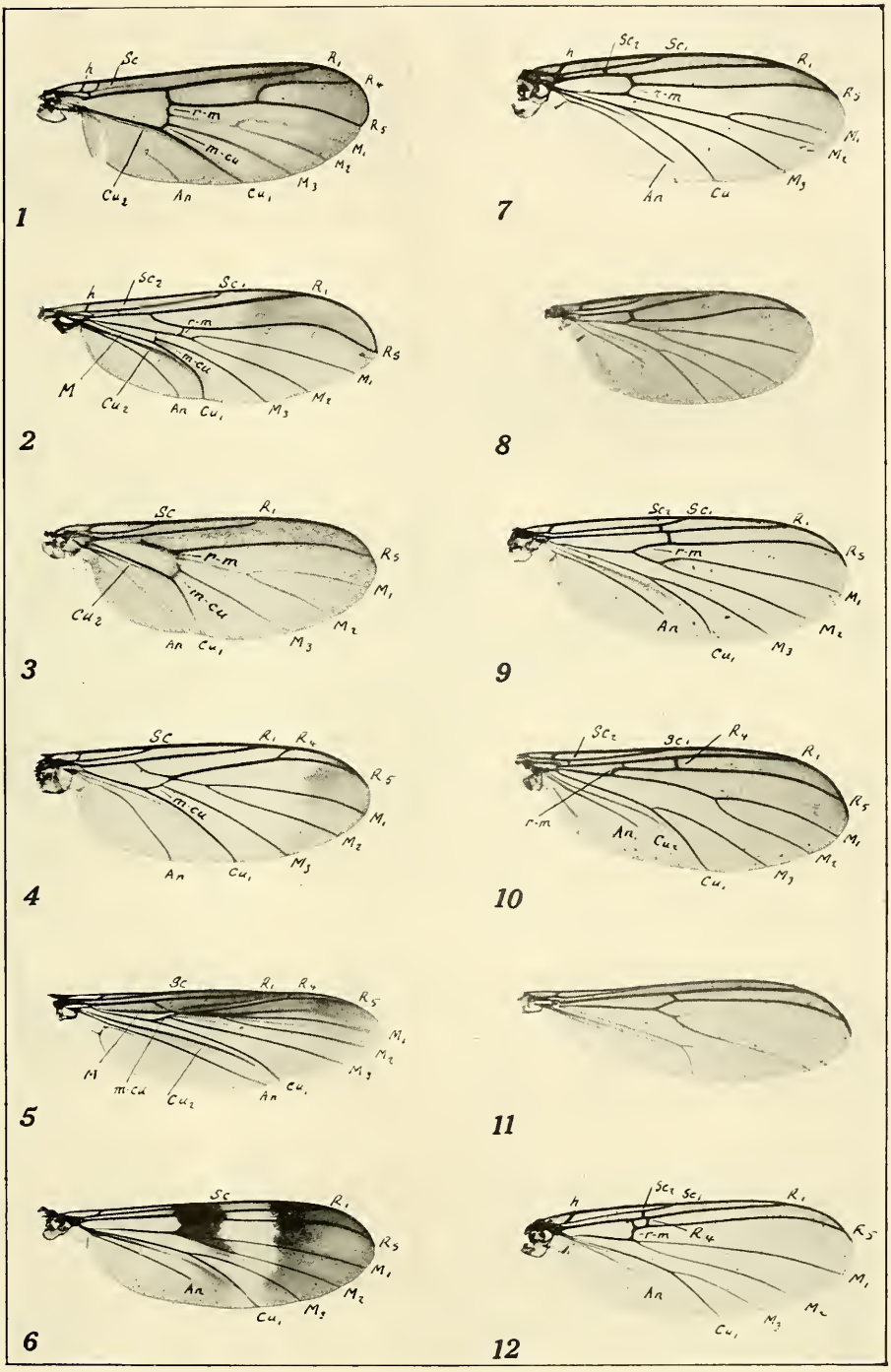
Plate xxii.

1. *Centrocnemis* sp.
2. *Arachnocampa luminosa* Sk.
3. *Diadocidia* sp.
4. *Neoantlemon apicalis*, n. sp.
5. *Nicholsonomyia vespiformis*, n. sp.
6. *Pareudicrana monticola*, n. sp.
7. *Allocotocera* sp.
8. *Neoallocotocera fusca*, n. sp.
9. *Tasmanina gracilis*, n. sp.
10. *Aneura* sp.
11. *Phthinia* sp.
12. *Austrosciophila solitaria*, n. sp.

Plate xxiii.

13. *Tetragoneura* sp.
14. *Paratrizygia conformis*, n. sp.
15. *Paramorganiella adventurosa*, n. sp.
16. *Synapha* sp.
17. *Austrosynapha hirta*, n. sp.
18. *Pseudalysiinia mimicans*, n. sp.
19. *Paraleia fulvescens*, n. sp.
20. *Rhymosia* sp.
21. *Allodia* sp.
22. *Zygomyia* sp.

The photographs were taken by Mr. W. C. Davis.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R1
R4
r-m
Rs
m-cu
M1
M2
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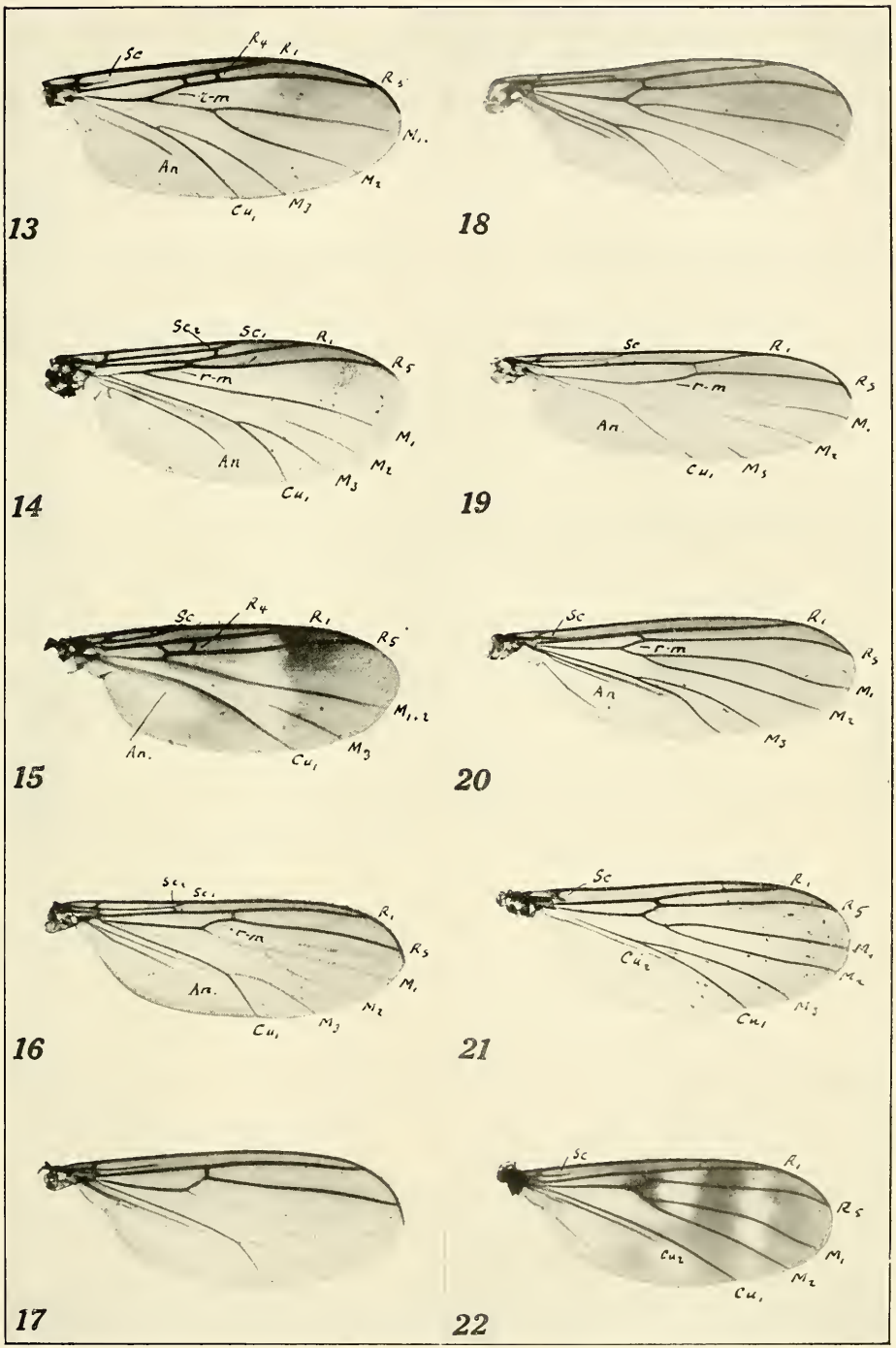
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